

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A composition comprising a liquid crystal material and an additive, wherein said additive is capable of forming a complex with said liquid crystal material, wherein said additive, when viewed on its own, has no permanent dipole or a dipole ≤ 0.1 Debye, wherein said additive is present in an amount of 0.01 - 0.15 wt.% of the total composition, and wherein said additive gains a dipole in the presence of said liquid crystal material and upon complex formation with said liquid crystal material.

2. (Original) The composition according to claim 1, wherein said liquid crystal material and said additive form a complex.

3. (Original) The composition according to claim 2, wherein said liquid crystal material and said additive form a complex, as measured by a method selected from the group comprising FTIR, UV-visible absorption, fluorescence, in particular polarized fluorescence, dielectric anisotropy and scanning near-field optical microscopy.

4. (Previously Presented) The composition according to Claim 1, wherein said liquid crystal material and said additive form a complex as simulated in MOPAC-simulations.

5. (Previously Presented) The composition according to claim 4, wherein said MOPAC-simulations comprise the following steps/conditions:

in a computer environment,

providing a molecular structure of said liquid crystal material and a molecular structure of said additive,

optimizing each molecular structure individually by determining the lowest energy of formation, determining the AM1 and PM3 Hamiltonians and selecting the lowest energy molecular structure that is best fitted by both Hamiltonians,

bringing together the optimized individual molecules resulting from the previous step, allowing them to combine, taking into account the charges of atoms, the distribution of charges and the dipole moment of the molecular structures,

permutating the previous combination step a number of times in the range of from 100 – 1000 times, thus allowing a complex, if any, of said liquid crystal material and additive molecules to form,

in such complex of molecules, optimizing the structure of the individual molecules so as to determine the lowest energy of formation of the complex and the lowest energy state of the complex.

6. (Previously Presented) The composition according to claim 5, wherein said MOPAC simulations comprise the additional step:

selecting the complex having the lowest energy of formation and calculating from its structure the dipole moment.

7. - 9. (Canceled)

10. (Currently Amended) The composition according to ~~Claim 7~~ Claim 1, wherein said additive is L20 (2,4-dichloro-3,6-diethoxybenzoquinone).

11. - 13. (Canceled)

14. (Previously Presented) The composition according to Claim 1, wherein said additive is a dye.

15. (Previously Presented) The composition according to Claim 1, wherein said liquid crystal material is selected from the group comprising MLC-2038, ZLI-1695, E7 and ZLI-4792.

16. (Previously Presented) The composition according to Claim 1, wherein said additive is soluble in said liquid crystal material.

17. (Previously Presented) The composition according to Claim 1, wherein said liquid crystal material has a permanent dipole.

18. (Previously Presented) The composition according to Claim 1, wherein said liquid crystal material has an induced dipole.

19. (Previously Presented) The composition according to Claim 1, wherein said composition has an order parameter of at least 0.5, wherein the order parameter S is defined as:

$$S = \frac{A_{||} - A_{\perp}}{A_{||} + A_{\perp}},$$

wherein $A_{||}$ and A_{\perp} are the measured absorbance values when the director axis of a liquid crystal or liquid crystal mixture is parallel ($A_{||}$) or perpendicular (A_{\perp}) to the

propagation axis of an incident polarized light, wherein, a parallel state can be achieved by:
in the case of a liquid crystal (LC) with positive dielectric anisotropy - inserting a liquid crystal or liquid crystal mixture in a parallel (or antiparallel, or homogeneous) aligned sandwiched cell; and either wherein a perpendicular state can be achieved by either applying an electric or magnetic field to such parallel (or antiparallel, or homogeneous) aligned cell, or alternatively by inserting the liquid crystal or liquid crystal mixture in a homeotropic (or perpendicularly, or vertically) aligned cell;

in the case of a LC with negative dielectric anisotropy - inserting a liquid crystal or liquid crystal mixture in a homeotropic (or perpendicularly or vertically) aligned sandwiched cell; and either wherein a parallel state can be achieved by either applying an electric or magnetic field to such homeotropic aligned cell, or alternatively by inserting the liquid crystal or liquid crystal mixture in a parallel (or antiparallel, or homogeneous) aligned cell.

20. (Previously Presented) A liquid crystal cell for a liquid crystal display comprising a composition according to Claim 1.

21. (Previously Presented) The liquid crystal cell according to claim 20, wherein said liquid crystal cell is a single pixel cell or a multiple pixel cell.

22. (Previously Presented) The liquid crystal cell according to Claim 20, wherein the composition is for improving the grey scale response time speeds of said liquid crystal cell and/or for shortening the rise and/or decay times of said liquid crystal cell.

23. (Previously Presented) The liquid crystal cell A liquid crystal cell comprising the composition according to Claim 1.

24. (Previously Presented) The liquid crystal cell according to claim 23 in a liquid crystal display.

25. (Previously Presented) A method of improving the response time and/or the dielectric anisotropy and/or the grey scale response speed of a liquid crystal in a liquid crystal cell, comprising the steps:

- providing a liquid crystal,
- adding an additive to said liquid crystal, wherein said additive is capable of forming a complex with said liquid crystal, wherein said liquid crystal and said additive are as defined in claim 1.

26. (Canceled)

27. (Previously Presented) The composition according to claim 1, wherein said additive is a dopant.